IN THE CLAIMS

1. (Previously presented) A combined battery and wireless-communications apparatus comprising:

a flexible support structure;

a first conductive layer deposited on a first surface area of the support structure;

a thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

an antenna mounted to the support structure; and

an electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceive radio communications.

2. (Original) The apparatus according to claim 1, wherein the anode or the cathode or both include an intercalation material or a metal or both.

3. (Previously presented) A combined battery and wireless-communications apparatus comprising:

a support structure;

a first conductive layer deposited on a first surface area of the support structure;

a thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

an antenna mounted to the support structure; and

an electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceive radio communications, wherein:

the cathode layer comprises a lithium intercalation material deposited on the first conductive layer; and

the electrolyte layer comprises LiPON.

4. (Original) The apparatus according to claim 1, wherein:

the cathode layer comprises lithium cobalt oxide deposited on the first conductive layer; and

the electrolyte layer comprises LiPON.

5. (Previously presented) The apparatus according to claim 1, wherein the support structure comprises a curved shape having a convex face and an opposing concave face, and the battery is curved and located on the concave face.

6. (Original) The apparatus according to claim 1, wherein the antenna is a thin-film trace deposited on the battery.

7. (Original) The apparatus according to claim 1, wherein the antenna is a thin-film trace deposited on the electronic communications circuit.

8. (Original) The apparatus according to claim 1, wherein the antenna is a thin-film trace deposited on the support structure.

9. (Original) The apparatus according to claim 1, wherein the electronic circuit includes a recharging circuit that recharges the battery using energy received by the antenna.

10. (Original) The apparatus according to claim 1, further comprising:

a photovoltaic cell, wherein the electronic circuit includes a recharging circuit that recharges the battery using energy received by the photovoltaic cell.

11. (Previously presented) A method for making an integrated combined battery and wireless-communications device comprising:

providing a flexible support structure;

depositing a first conductive layer on a first surface area of the support structure;

depositing a thin-film battery as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

mounting an antenna to the support structure;

mounting an electronic communications circuit to the support structure; and

electrically coupling the electronic communications circuit to the battery and the antenna to transceive radio communications.

12. (Original) The method according to claim 11, wherein the anode or the cathode or both include an intercalation material or a metal or both.

13. (Original) The method according to claim 11, wherein the depositing of the thin-film battery comprises:

depositing a lithium intercalation material on the first conductive layer as the cathode layer; and

depositing the electrolyte layer on the cathode layer, wherein the electrolyte layer comprises LiPON.

14. (Original) The method according to claim 11, wherein the depositing of the thin-film battery comprises:

depositing a lithium cobalt oxide material on the first conductive layer as the cathode layer; and

depositing the electrolyte layer on the cathode layer, wherein the electrolyte layer comprises LiPON.

15. (Original) The method according to claim 11, wherein the depositing of the thin-film battery comprises:

depositing the cathode layer on the first conductive layer;

depositing the electrolyte layer on the cathode layer, wherein the electrolyte layer comprises LiPON; and

depositing the anode layer comprising a lithium intercalation material on the electrolyte layer.

16. (Previously presented) The method according to claim 11, wherein the support structure has a curved shape having a convex face and a concave face, and the battery is curved and located on the concave face.

17. (Original) The method according to claim 11, wherein the mounting of the antenna comprises depositing a thin-film trace on the battery.

18. (Original) The method according to claim 11, wherein the mounting of the antenna comprises depositing a thin-film trace on the electronic communications circuit.

19. (Original) The method according to claim 11, wherein mounting of the antenna comprises depositing a thin-film trace on the support structure.

20. (Original) The method according to claim 11, wherein the electronic circuit includes a recharging circuit that recharges the battery using energy received by the antenna.

21. (Original) The apparatus according to claim 11, further comprising:

mounting a photovoltaic cell to the support structure, wherein the electronic circuit includes a recharging circuit that recharges the battery using energy received by the photovoltaic cell.

22. (Previously presented) An integrated combined battery and wireless-recharging apparatus comprising:

a flexible support structure;

a first conductive layer deposited on a first surface area of the support structure;

a thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

an energy-receiving device mounted to the support structure; and

an electronic communications circuit including an antenna mounted to the support structure and including a recharging circuit, the recharging circuit electrically coupled to the battery and the energy-receiving device to recharge the battery using energy received by the energy-receiving device.

23. (Original) The apparatus according to claim 22, wherein the anode or the cathode or both include an intercalation material or a metal or both, and wherein the electrolyte layer comprises LiPON.

24. (Original) The apparatus according to claim 22, wherein the cathode layer comprises lithium cobalt oxide deposited on the first conductive layer, and wherein the electrolyte layer comprises LiPON.

25. (Original) The apparatus according to claim 22, wherein the energy-receiving device comprises a photovoltaic cell.

26. (Original) The apparatus according to claim 22, wherein the energy-receiving device comprises an antenna.

27. (Original) The apparatus according to claim 22, wherein the energy-receiving device comprises an electromechanical electric generator.

28. (Original) The apparatus according to claim 22, wherein the energy-receiving device comprises an acoustic transducer.

29. (Original) The apparatus according to claim 22, further comprising a magnetic transducer.

30. (Original) The apparatus according to claim 22, further comprising an acoustic transducer.

31. (Previously presented) An integrated combined rechargeable battery and wirelessly recharging hearing aid apparatus comprising:

a support structure;

a first conductive layer deposited on a first surface area of the support structure;

a thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

a wireless energy-receiving device mounted to the support structure; and

an electronic hearing-aid circuit mounted to the support structure and including a recharging circuit, the recharging circuit electrically coupled to the battery and the energy-receiving device to recharge the battery using energy received by the energy-receiving device.

32. (Original) The apparatus according to claim 22, wherein the apparatus operates as an implantable medical device.

33. (Previously presented) An integrated combined rechargeable battery and wirelessly recharging timepiece apparatus comprising:

a flexible support structure;

a first conductive layer deposited on a first surface area of the support structure;

a thin-film battery deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

a wireless energy-receiving device mounted to the support structure; and

an electronic timepiece circuit mounted to the support structure and including a recharging circuit, the recharging circuit electrically coupled to the battery and the energy-receiving device to recharge the battery using energy received by the energy-receiving device.

34. (Previously presented) The apparatus according to claim 22, wherein the anode comprises an intercalation material and wherein the electrolyte layer comprises LiPON.

35. (Previously presented) The apparatus according to claim 22, wherein the cathode comprises an intercalation material and wherein the electrolyte layer comprises LiPON.

36. (Previously presented) The apparatus according to claim 22, wherein both the anode and the cathode comprise an intercalation material and wherein the electrolyte layer comprises LiPON.

37. (Previously presented) The apparatus according to claim 22, wherein the anode comprises a metal and wherein the electrolyte layer comprises LiPON.

38. (Previously presented) The apparatus according to claim 22, wherein the cathode comprises a metal and wherein the electrolyte layer comprises LiPON.

39. (Previously presented) The apparatus according to claim 22, wherein both the anode and the cathode comprise a metal and wherein the electrolyte layer comprises LiPON.

40. (Previously presented) The apparatus according to claim 31, wherein the energy-receiving device comprises a photovoltaic cell.

41. (Previously presented) The apparatus according to claim 33, wherein the energy-receiving device comprises a photovoltaic cell.

42. (Previously presented) The apparatus according to claim 1, wherein the electrolyte layer has a thickness of less than 1000 Angstroms.

43. (Withdrawn) An apparatus comprising:

a thin-film battery affixed to at least one surface of a substrate;

a bonding pad located on the substrate and distanced from the thin-film battery, the bonding pad being electrically coupled to the thin-film battery;

a protective coating located on the thin-film battery;

a device affixed to said thin-film battery via the protective coating, the protective coating being located between the thin-film battery and the device, and electrically coupled to the thin-film battery through a conductor coupled to the bonding pad, the conductor being external to the thin-film battery and to the device; and

an encapsulant to encapsulate the device, the thin-film battery, the external conductor, and the bonding pad.

44. (Withdrawn) The apparatus of claim 43, wherein said thin-film battery affixed to at least one surface comprises: an anode of said thin-film battery electrically coupled to an anode current collector proximate to the at least one surface.

45. (Withdrawn) The apparatus of claim 44, wherein said anode current collector of said thin-film battery electrically coupled to the anode current collector proximate to the at least one surface comprises:

said anode of said thin-film battery electrically coupled to a conductive substance of the substrate, which is a part of a part of a semiconductor package substrate.

46. (Withdrawn) The apparatus of claim 43, wherein said thin-film battery affixed to at least one surface comprises:

a cathode of said thin-film battery electrically coupled to a cathode current collector proximate to the at least one surface.

47. (Withdrawn) The apparatus of claim 46, wherein said cathode of said thin-film battery electrically coupled to the cathode current collector proximate to the at least one surface comprises:

said cathode current collector of said thin-film battery electrically coupled to a conductive substance of the substrate, which is a part of a semiconductor package substrate.

48. (Withdrawn) The apparatus of claim 43, wherein

said thin-film battery affixed to the at least one surface of the substrate is affixed to a conductive trace and at least one dielectric layer present on the surface of the substrate.

49. (Withdrawn) The apparatus of claim 48, wherein said thin-film battery affixed to the substrate comprises:

said thin-film battery affixed to a ball grid array substrate.

50. (Withdrawn) The apparatus of claim 43, wherein said thin-film battery affixed to at least one surface comprises:

said thin-film battery having a height of substantially 15 micrometers or less.

51. (Withdrawn) The apparatus of claim 43, wherein said thin-film battery affixed to at least one surface comprises:

said thin-film battery having a height substantially less than a height of an integrated circuit substrate.

52. (Withdrawn) The apparatus of claim 43, wherein said thin-film battery affixed to at least one surface comprises:

a lithium ion or lithium-free thin-film battery affixed to the at least one surface.

53. (Withdrawn) The apparatus of claim 43, wherein said device affixed to said thin-film battery comprises:

an integrated circuit affixed to said thin-film battery.

54. (Withdrawn) The apparatus of claim 53, wherein said integrated circuit affixed to said thin-film battery comprises:

an integrated circuit substrate affixed to at least one surface of said thin-film battery.

55. (Withdrawn) The apparatus of claim 53, wherein said integrated circuit component affixed to said thin-film battery comprises:

at least one electric circuit electrically connected coupled with said thin-film battery via the conductor coupled to the bonding pad.

56. (Withdrawn) The apparatus of claim 43, wherein the apparatus device comprises a part of:

a computer system of a computer-system group including a handheld computer system, a personal computer system, a workstation computer system, a minicomputer system, and a mainframe computer system.

57. (Withdrawn) The apparatus of claim 43, wherein the apparatus device comprises a part of:

a wireless device of a wireless-device group including a wireless phone, a wireless handheld computer, a wireless modem, a wireless email unit, and a Global Positioning System locator.

58. (Withdrawn) An apparatus comprising:

a thin-film battery affixed to a substrate;

a bonding pad located on the substrate and distanced from the thin-film battery, the bonding pad being electrically coupled to the thin-film battery;

a protective coating located on the thin-film battery;

an integrated circuit affixed to and overlying said thin-film battery via the protective coating, the protective coating being located between the thin-film battery and the integrated circuit, and electrically coupled to the thin-film battery through a conductor coupled to the bonding pad, the conductor being external to the thin-film battery and to the integrated circuit; and

an encapsulant to encapsulate the integrated circuit, the thin-film battery, the external conductor, and the bonding pad.

59. (Withdrawn) The apparatus of claim 58, wherein the substrate includes a surface having a conductive trace and at least one dielectric layer present thereon, the thin-film battery being formed over at least a portion of the conductive trace and the at least one dielectric layer.

60. (Withdrawn) The apparatus of claim 58, wherein said protective coating is an insulating layer interposed between said thin-film battery and said integrated circuit.

61. (Withdrawn) The apparatus of claim 58, wherein said integrated circuit affixed to and overlying said thin-film battery comprises:

said thin-film battery having a height substantially less than a height of an integrated circuit substrate.

62. (Withdrawn) The apparatus of claim 58, wherein said thin-film battery comprises:

a lithium ion or lithium-free thin-film battery.

63. (Withdrawn) The apparatus of claim 58, wherein said integrated circuit affixed to and overlying said thin-film battery comprises:

an integrated circuit substrate affixed to at least one surface of said thin-film battery.

64. (Withdrawn) The apparatus of claim 58, wherein said integrated circuit affixed to and overlying said thin-film battery comprises:

at least one electric circuit electrically coupled with said thin-film battery through the conductor coupled to the bonding pad.

65. (Withdrawn) The apparatus of claim 43, further comprising:

an insulating layer located between the battery and the substrate, the insulating layer having a portion extending over the substrate external to the battery; and

a conductive trace located on the substrate between the insulating layer and the substrate, the insulating layer having an opening located in the portion that extends external to the battery to expose a region of the conductive trace and to accommodate the bonding pad to allow electrical

connection between the conductor coupled to the bonding pad and the region of the conductive trace.

66. (Withdrawn) The apparatus of claim 58, further comprising:

an insulating layer located between the battery and the substrate, the insulating layer having a portion extending over the substrate external to the battery; and

a conductive trace located on the substrate between the insulating layer and the substrate, the insulating layer having an opening located in the portion that extends external to the battery to expose a region of the conductive trace and to accommodate the bonding pad to allow electrical connection between the conductor coupled to the bonding pad and the region of the conductive trace.

67. (Withdrawn) An apparatus comprising:

a thin-film battery affixed to at least one surface of a substrate;

a protective coating located on the thin-film battery;

a device affixed to said thin-film battery via the protective coating, and electrically coupled to the thin-film battery through a conductor external to the thin-film battery and to the device; and

an encapsulant to encapsulate the device and external conductor.

68. (Withdrawn) The apparatus of claim 67, further comprising:

an insulating layer located between the battery and the substrate, the insulating layer having a portion extending over the substrate external to the battery; and

a conductive trace located on the substrate between the insulating layer and the substrate, the insulating layer having an opening located in the portion that extends external to the battery to receive the conductor and to allow electrical connection between the conductor and the conductive trace.

69. (Withdrawn) The apparatus of claim 67, further comprising a bonding pad located external to the battery and onto which the external conductor is electrically coupled, the encapsulant further encapsulating the bonding pad.

70. (Withdrawn) The apparatus of claim 67, wherein the encapsulant further encapsulates at least a portion of the battery and substantially most of the external conductor.

71. (Previously presented) The apparatus of claim 67, wherein the substrate includes

a flexible support structure, and

a first conductive layer deposited on a first surface area of the support structure; and

and wherein the thin-film battery is

deposited as successive thin-film depositions over at least a portion of the first conductive layer, the battery comprising a cathode layer; a solid-state electrolyte layer, and an anode layer deposited such that either the anode layer or the cathode layer is in electrical contact with the first conductive layer, and the electrolyte layer in contact with and completely separating the anode layer and the cathode layer, wherein the electrolyte layer includes LiPON;

and wherein the device includes

an antenna mounted to the support structure; and

an electronic communications circuit mounted to the support structure and electrically coupled to the battery and the antenna to transceive radio communications.

72. (Previously presented) The apparatus of claim 1, wherein the flexible support structure, and the first conductive layer deposited on a first surface area of the support structure form a substrate and the successive thin-film depositions form the thin-film battery affixed to at least one surface of the substrate;

wherein the apparatus further includes a protective coating located on the thin-film battery;

wherein the antenna and electronic communications circuit form a device that is affixed to said thin-film battery via the protective coating, and electrically coupled to the thin-film battery through a conductor external to the thin-film battery and to the device; and wherein the apparatus further includes

an encapsulant to encapsulate the device and external conductor.